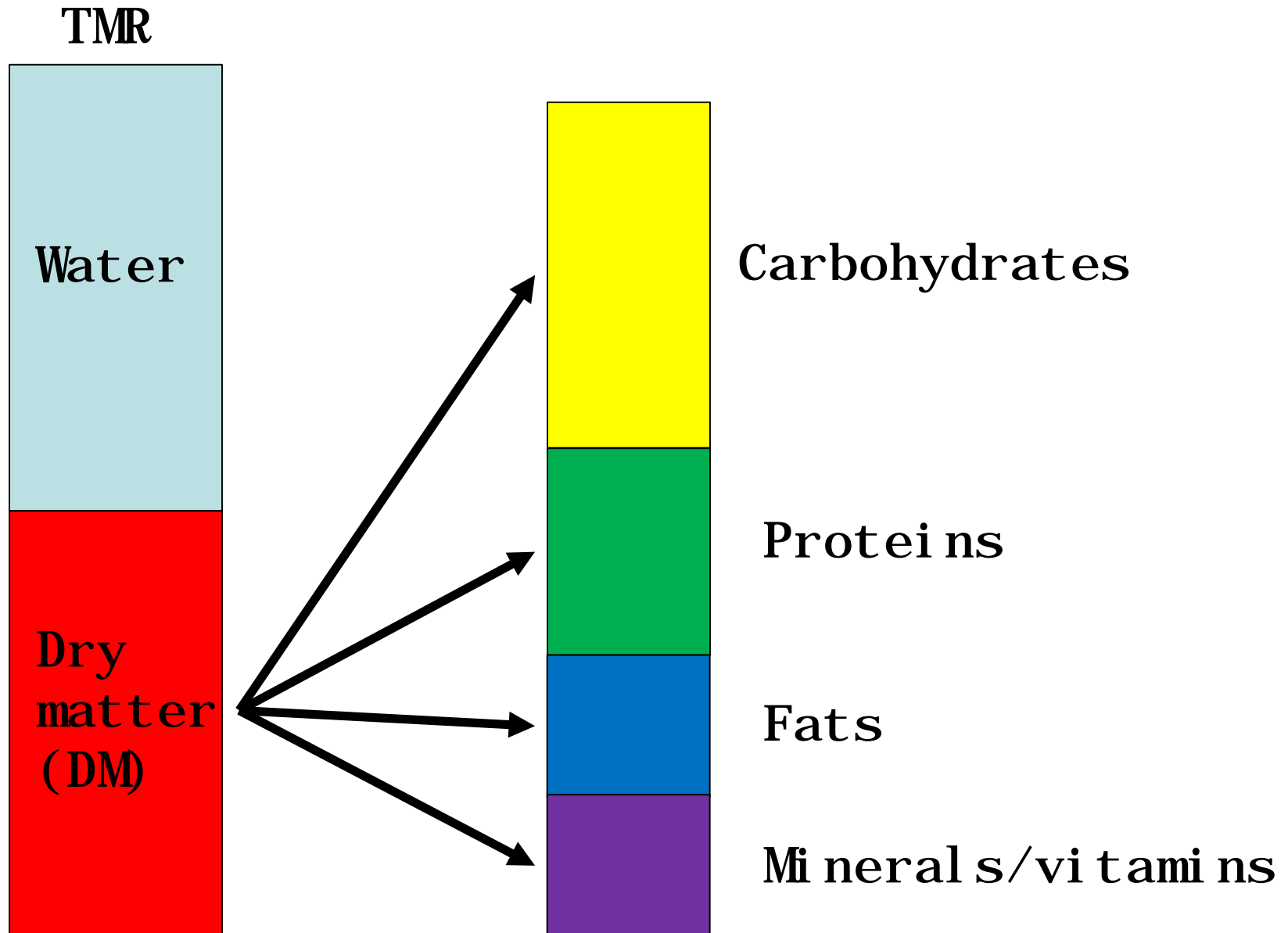


How Sweet It Is - Sweeten Your Cow's Ration With Sugars to Aid Production

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Moisture and DM Content of TMR



Carbohydrates in a TMR

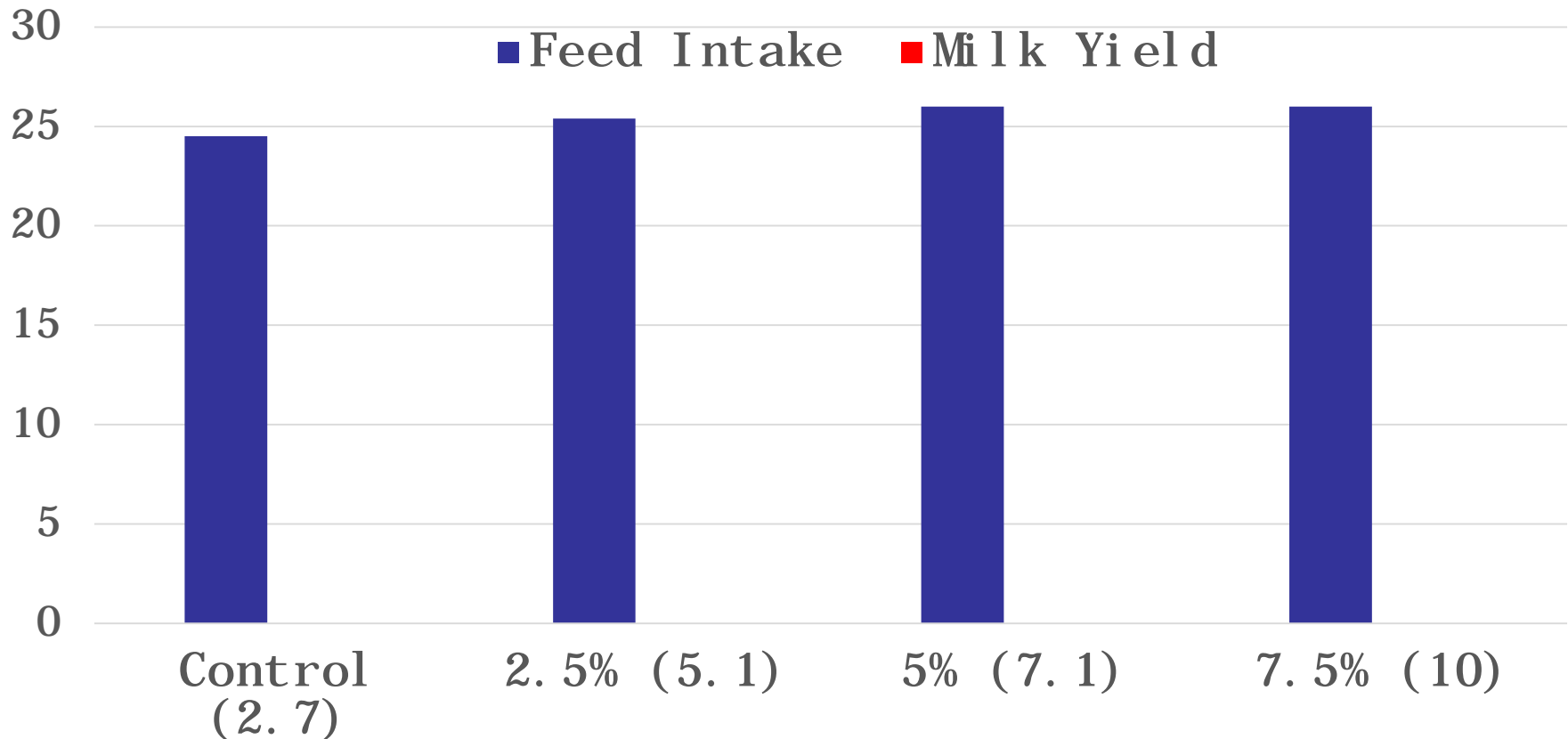
- 60- 70% of dietary DM
- Structural carbohydrates that maintain rumen function
 - Fibre from forages
- Non-structural carbohydrates
 - Starch, simple sugars (glucose, sucrose, fructose etc.)
 - Energy for microorganisms; volatile fatty acids for milk production

Carbohydrate Contents of Various Feeds (% of DM)

FEED	STARCH	SUGAR
Al f a l f a h a y	2. 0	6. 0
Al f a l f a s i l a g e	1. 0	2. 0
B a r l e y g r a i n	60	0. 8- 1
B a r l e y s i l a g e	16	<1
C o r n g r a i n	70	0- 5. 2
C o r n s i l a g e	30	1. 0
M o l a s s e s, c a n e	0	55
S u g a r b e e t p u l p	2. 0	14
W h e y	0	75

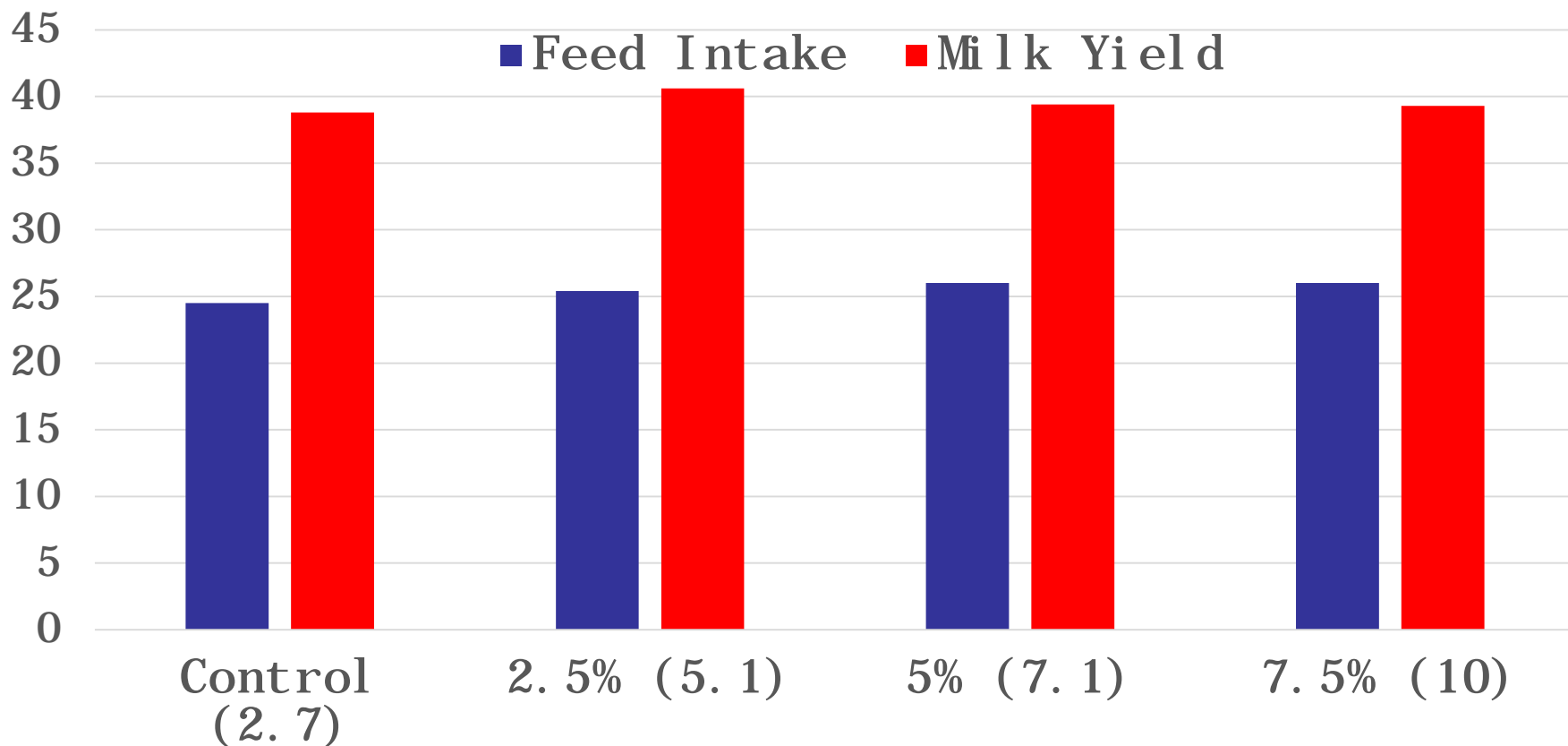
- Rate of fermentation: starch 6- 60%/hr; sugars 300- 1400%/hr

DMI Response to Feeding Sucrose (kg/day)



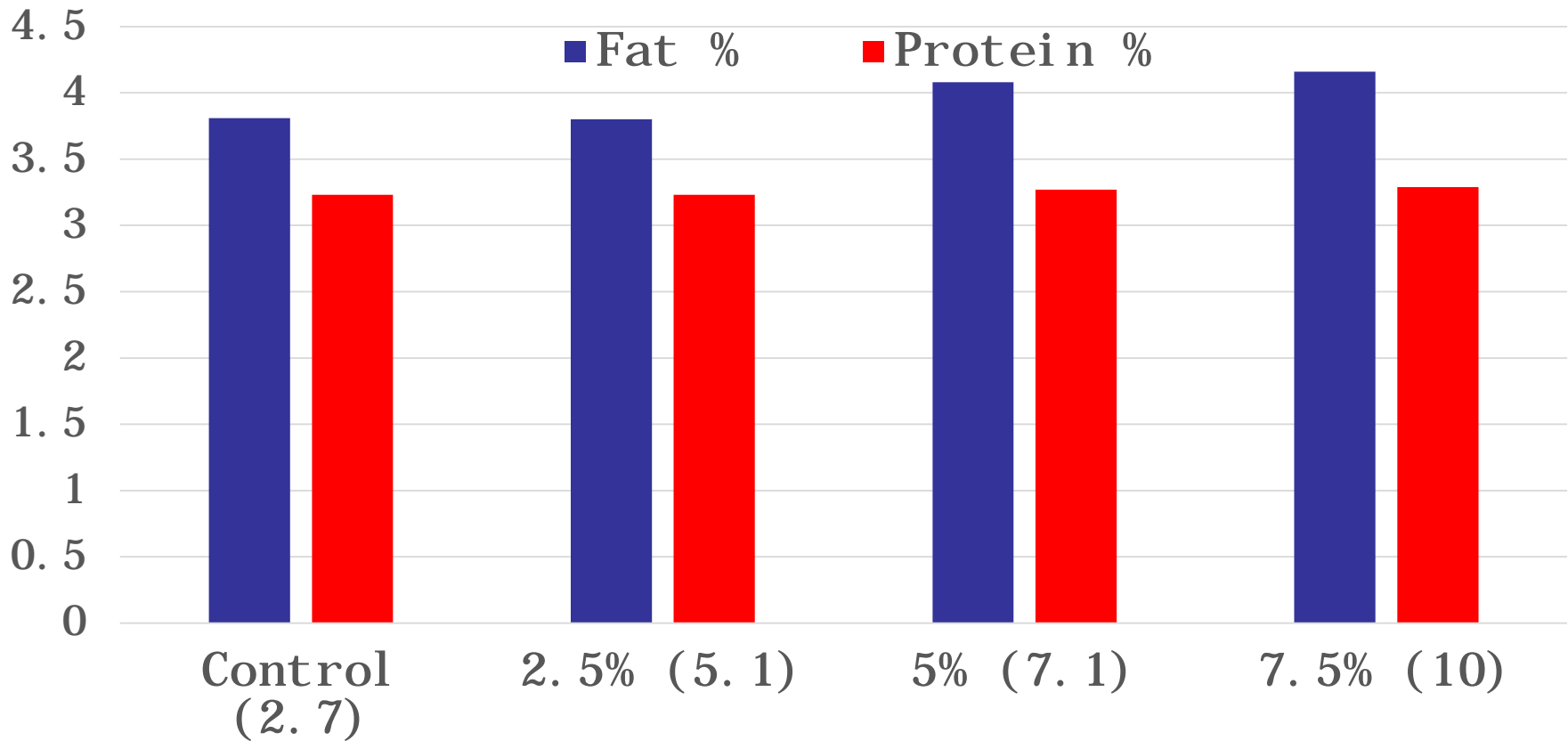
- +1-1.5 kg/d response in feed intake

DMI, MY Responses to Feeding Sucrose (kg/day)



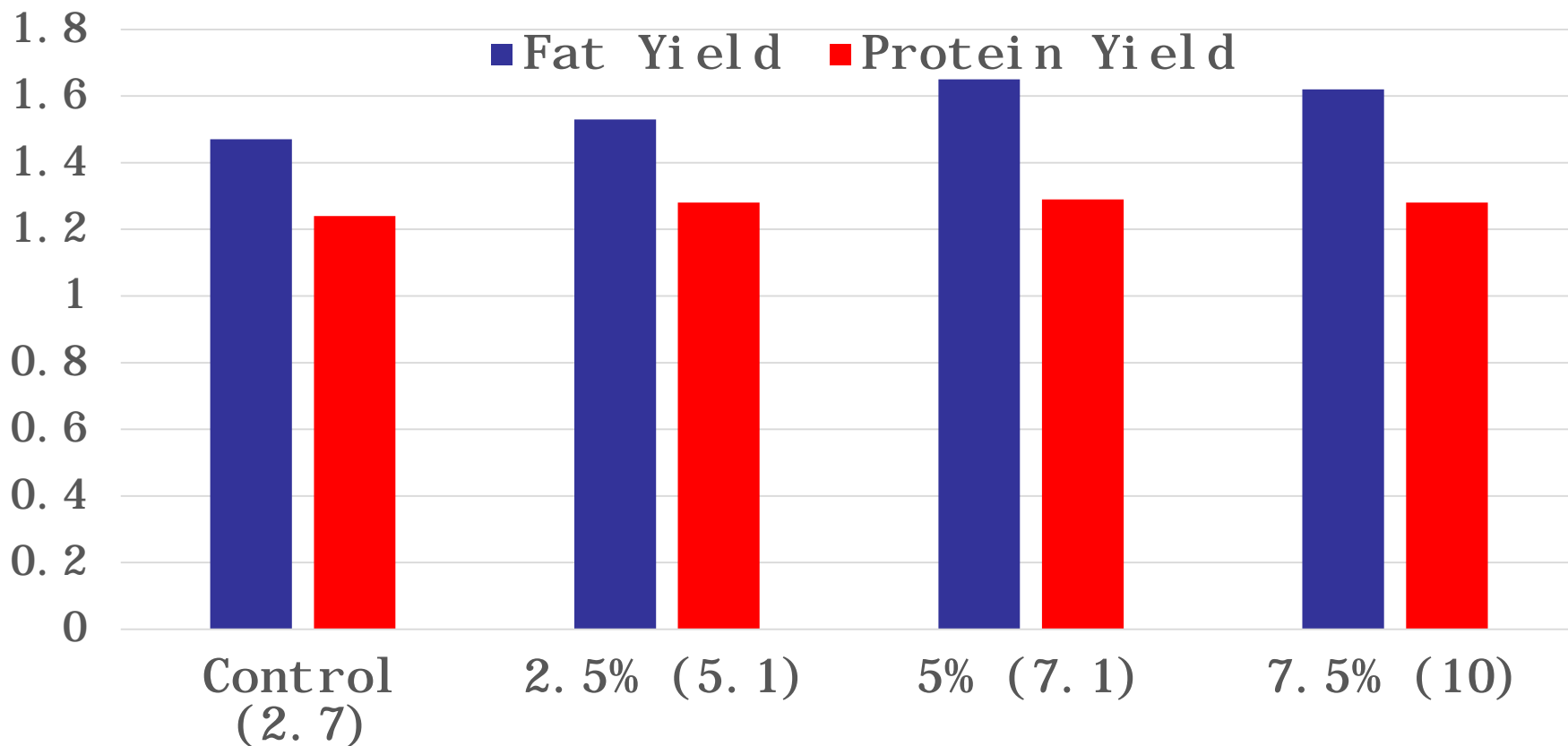
- +0.5-1.8 kg/d response in milk yield

Milk Fat, Protein Responses to Feeding Sucrose (%)



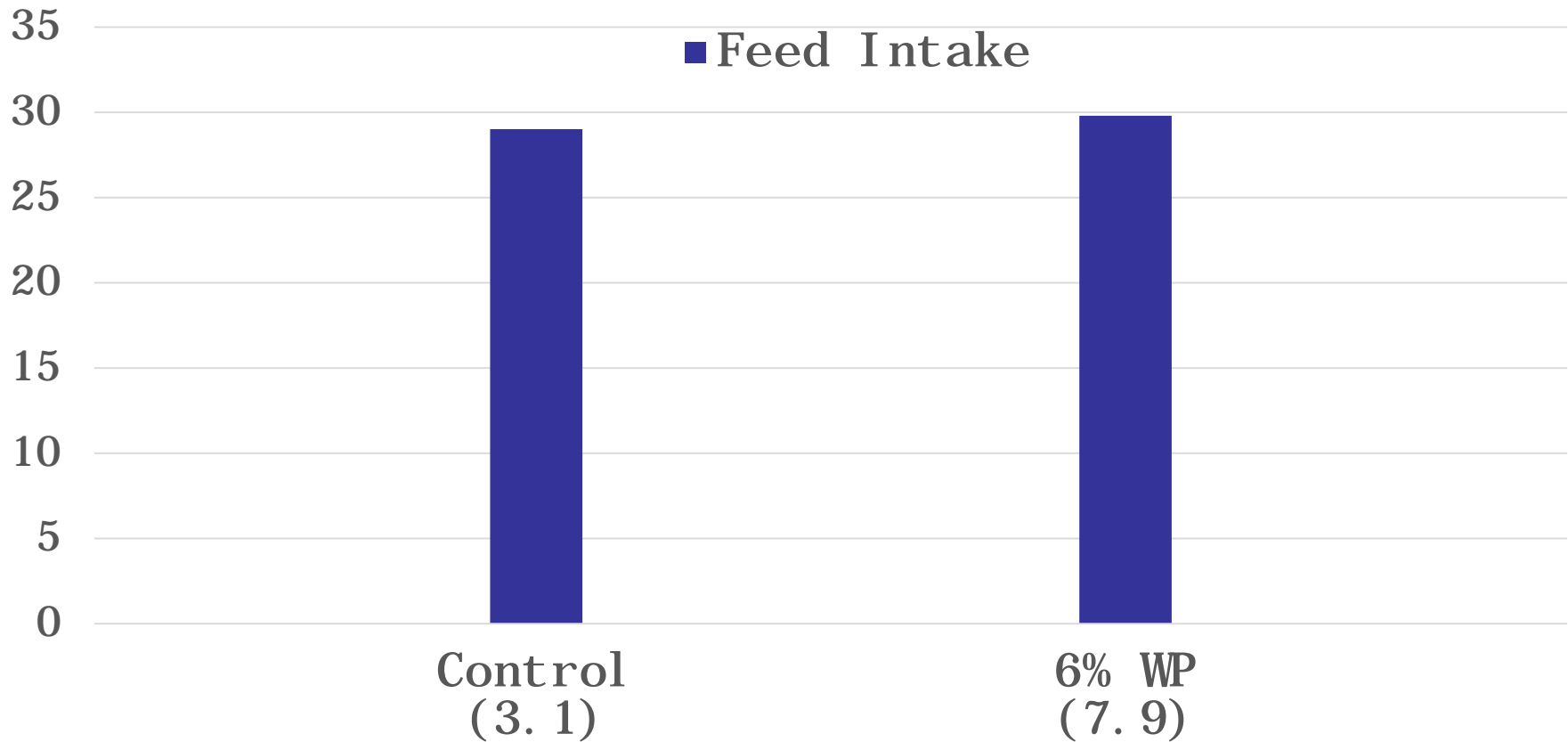
- +0.28-0.36% units response in milk fat test

Milk Fat, Protein Responses to Feeding Sucrose (kg/d)



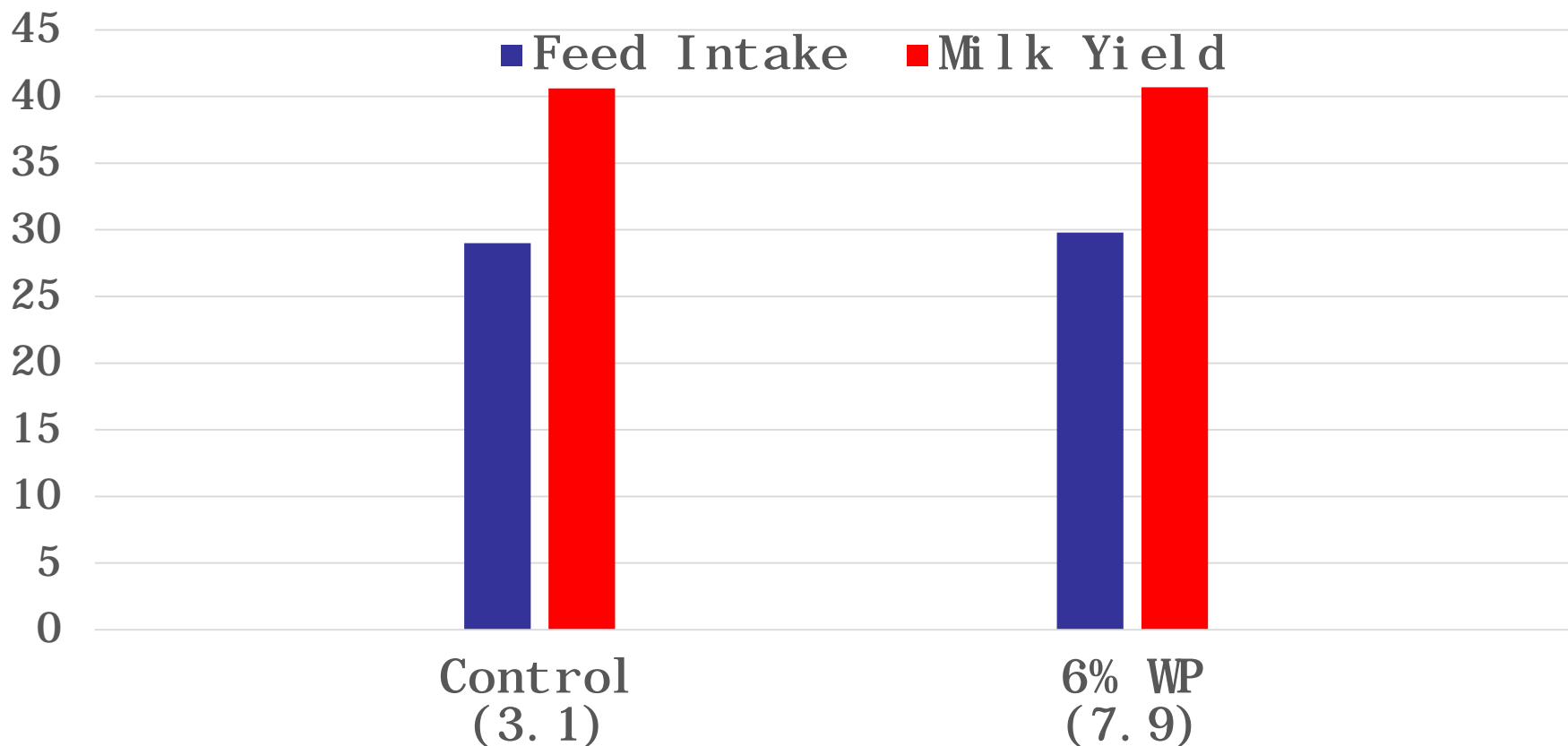
- +0.06-0.18 kg/d response in milk fat yield

DMI Response to Feeding Whey Permeate (WP) (kg/day)



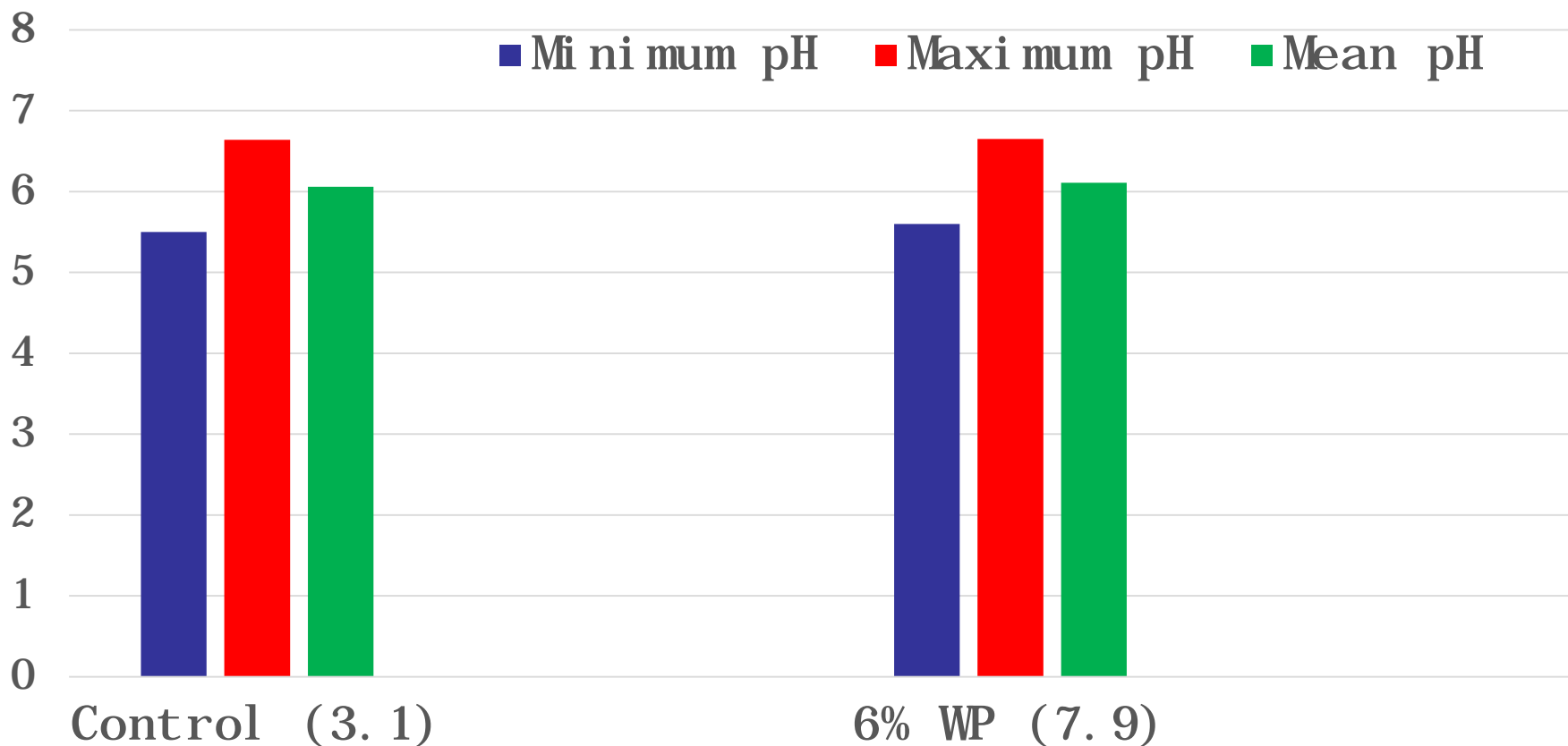
- No significant effects on DMI

DMI, MY Responses to Feeding Whey Permeate (kg/day)



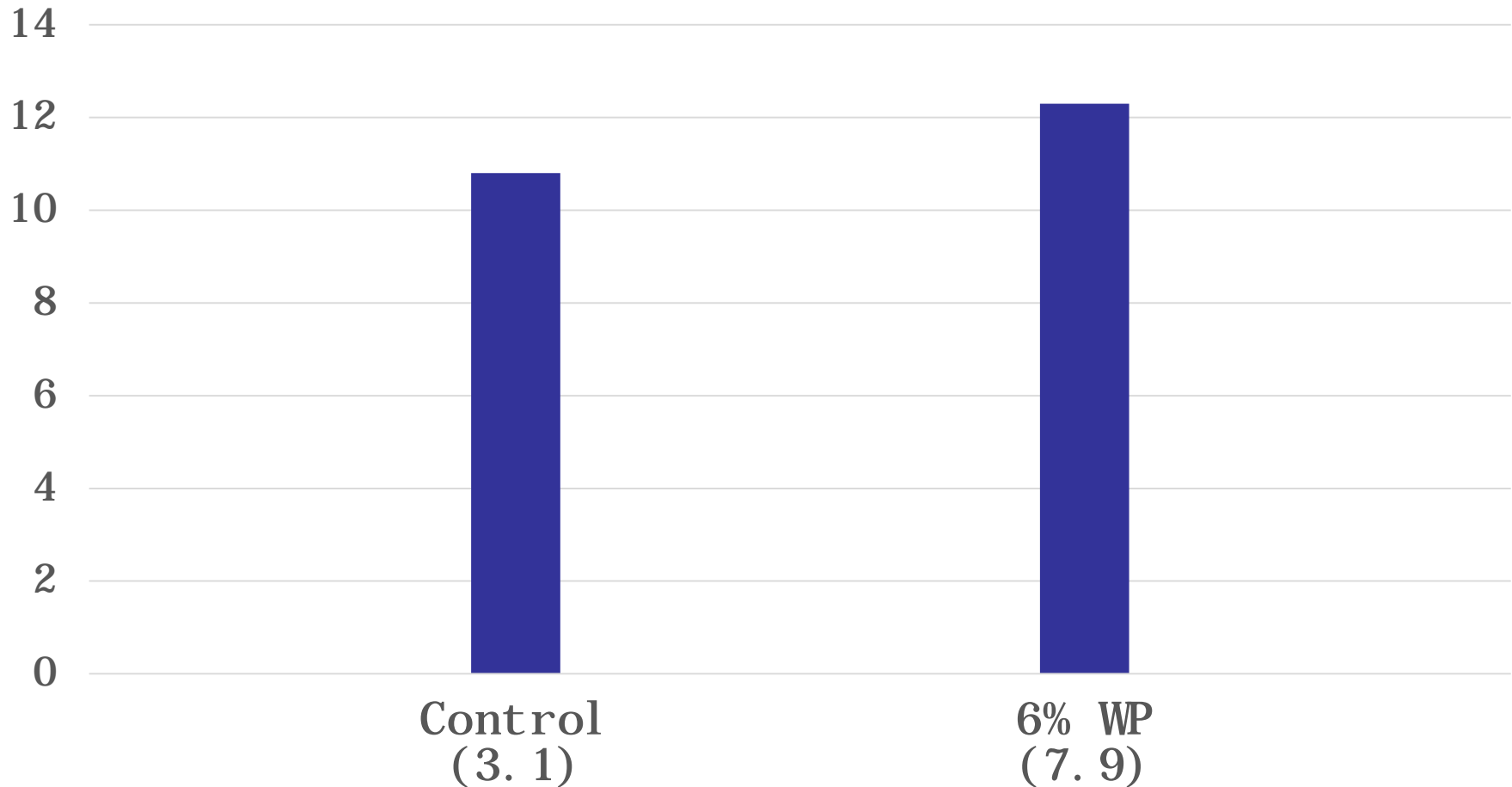
- No significant effects on milk yield

Rumen pH Responses to Feeding Whey Permeate



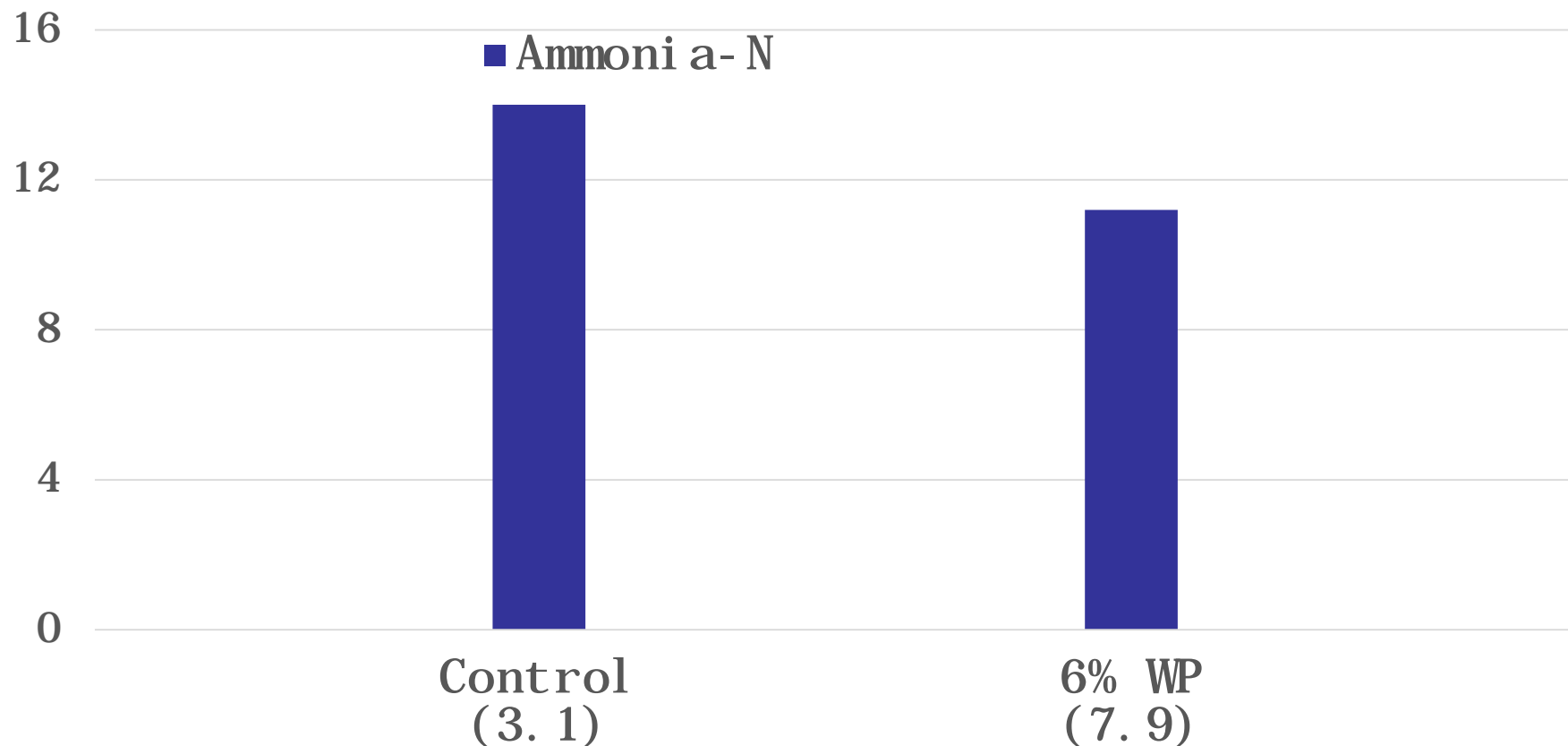
- Feeding supplemental sugar did not induce rumen acidosis

Rumen Butyrate (mmol/L) Response to Feeding Whey Permeate



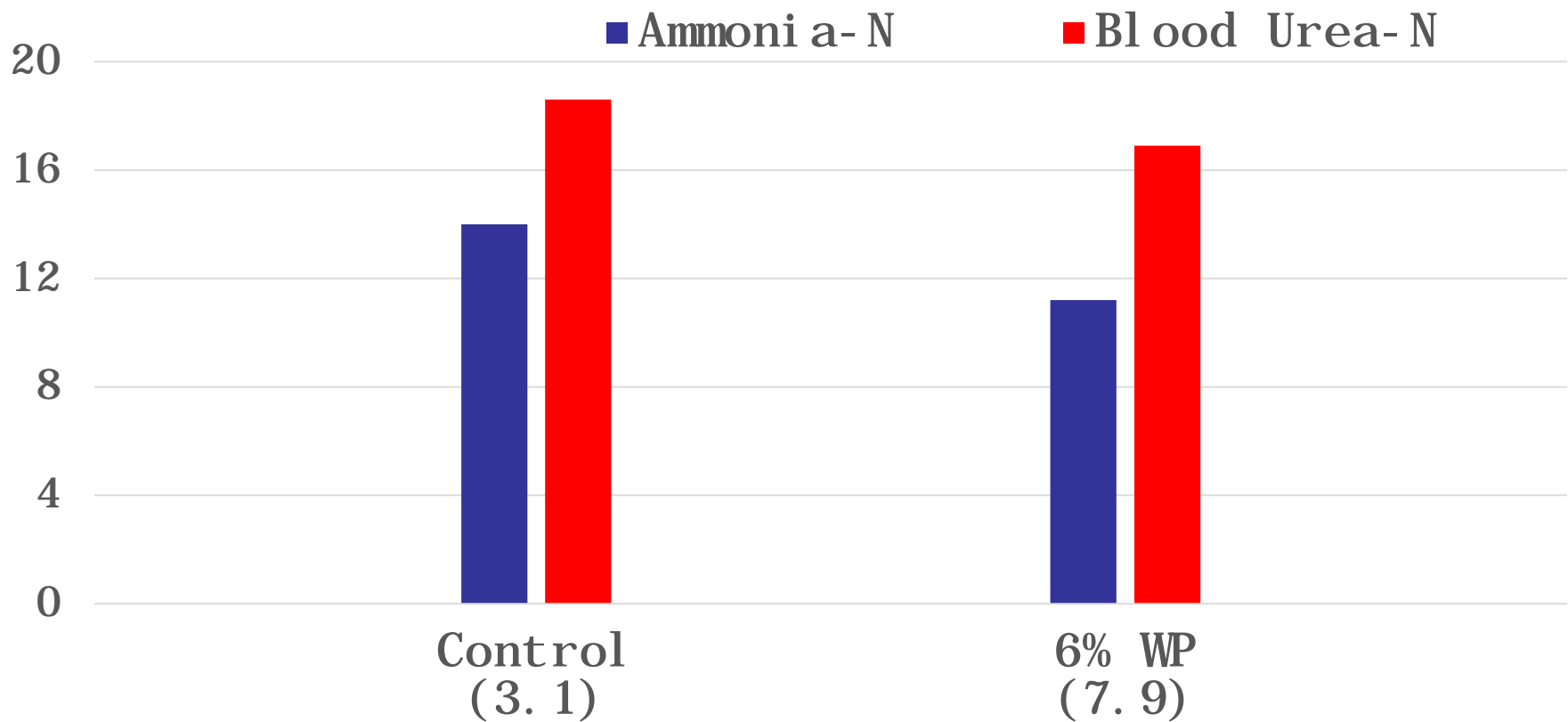
- Rumen butyrate concentration higher when feeding whey permeate

Responses in N Utilization to Feeding Whey Permeate (mg/dL)



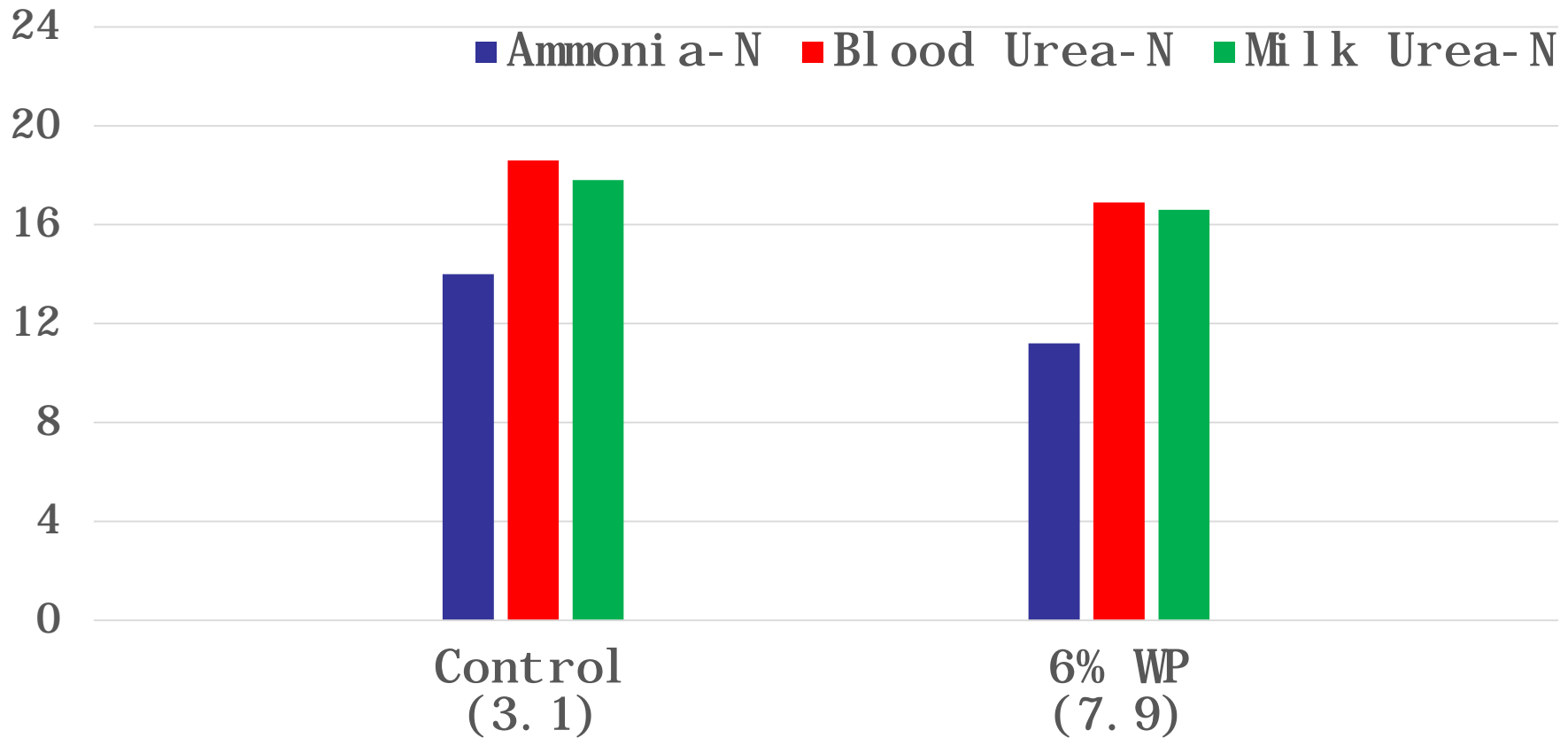
- Rumen ammonia-N concentration lower when feeding whey permeate

Responses in N Utilization to Feeding Whey Permeate



- Blood urea-N lower when feeding whey permeate

Responses in N Utilization to Feeding Whey Permeate



- Milk urea-N concentration lower when feeding whey permeate

Take-Home Messages

- No set recommendations for level of dietary sugars or source
- Can feed supplemental sugar as a replacement for starch at 2.5 up to 7.5%
- No risk of rumen acidosis
- Ensure adequate dietary NDF to maintain rumen function and health

Take-Home Messages

- Positive responses in feed intake, milk yield with corn-based diets + sucrose
 - Barley-based diets?
- Positive responses milk fat test, fat yield